

# Controlling a Servo Motor

Picobricks

Beginner

15 Mins

## 1 Overview

In this tutorial we're going to control a servo motor using the motor controller on the PicoBricks board.



### What you'll learn

- How to connect a servo motor to the PicoBricks through the motor controller.
- How to control the servo motor through code.

## 2 What you'll need



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- PicoBricks
- Servo motor
- USB to MicroUSB cable

### 3 Key words

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##### **Servo motor**

A servo motor is a special motor that turns to an exact position you tell it, like 0 or 90 degrees, instead of just spinning round and round.

*Like the hand on a clock moving to point at a number, a servo turns to the exact angle you ask for.*

##### **Motor controller**

A motor controller is the part that sits between your board and a motor, passing on the right amount of power so the motor moves the way your code asks.

*Like a remote control for a toy car, it takes your instructions and makes the motor do them.*

##### **PicoBricks**

PicoBricks is an all-in-one coding kit that joins up handy parts, like a screen, a buzzer, buttons and lights, onto one board, so you can build projects without any fiddly wiring.

*It's a bit like a Lego baseboard for electronics: everything clicks together in one place, ready to code.*

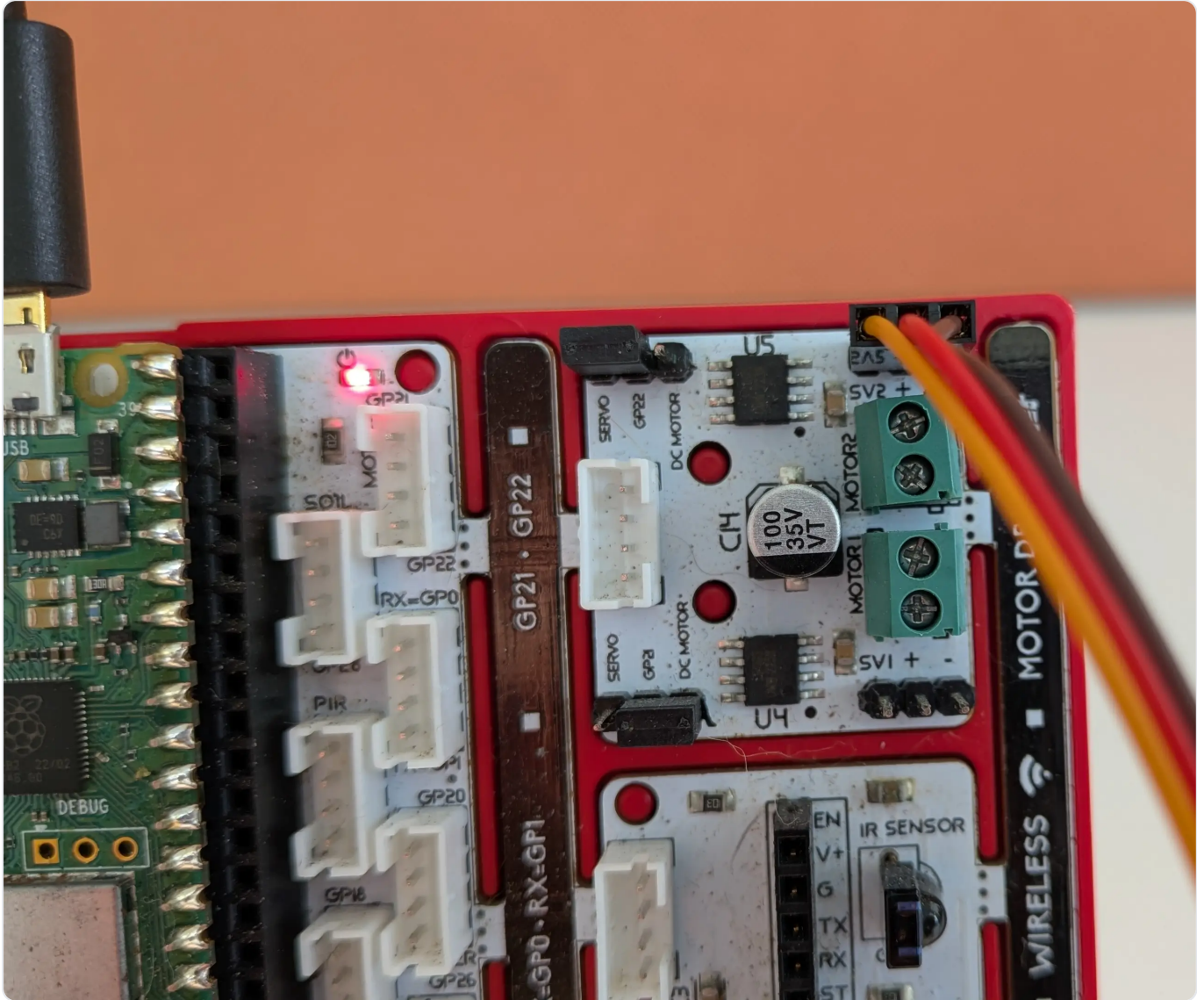
##### **Forever loop**

A forever loop repeats its instructions again and again without ever stopping (until you switch off or reset). It's perfect for anything you want to keep happening over and over.

*Like a clock's second hand that keeps ticking round and round, a forever loop keeps running the same steps over and over.*

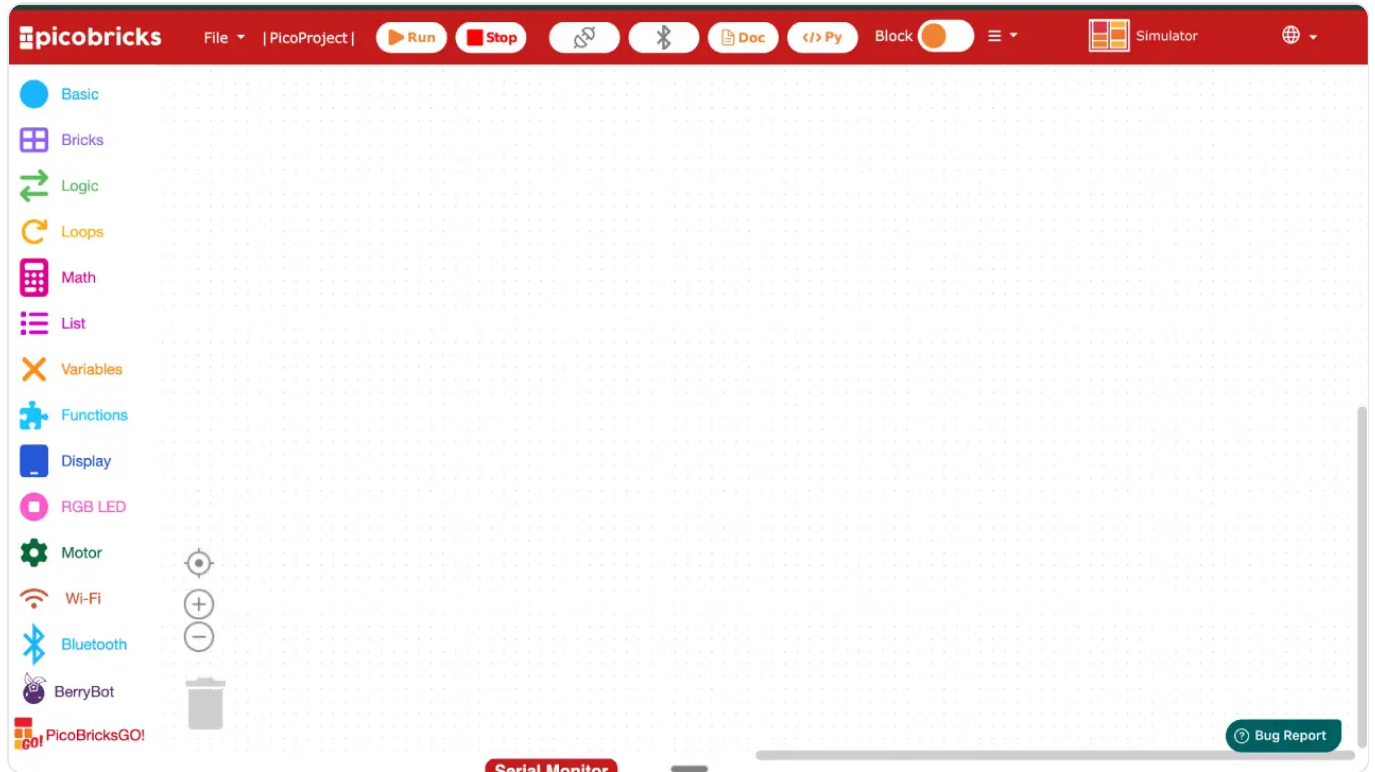
## 4 Wire up the servo motor

Connect the servo motor to the top connector of the motor controller with the yellow wire on the left pin. There's also a jumper across three pins. Make sure it's set for the servo motor, which means the jumper should be pushed as far left as it can go.



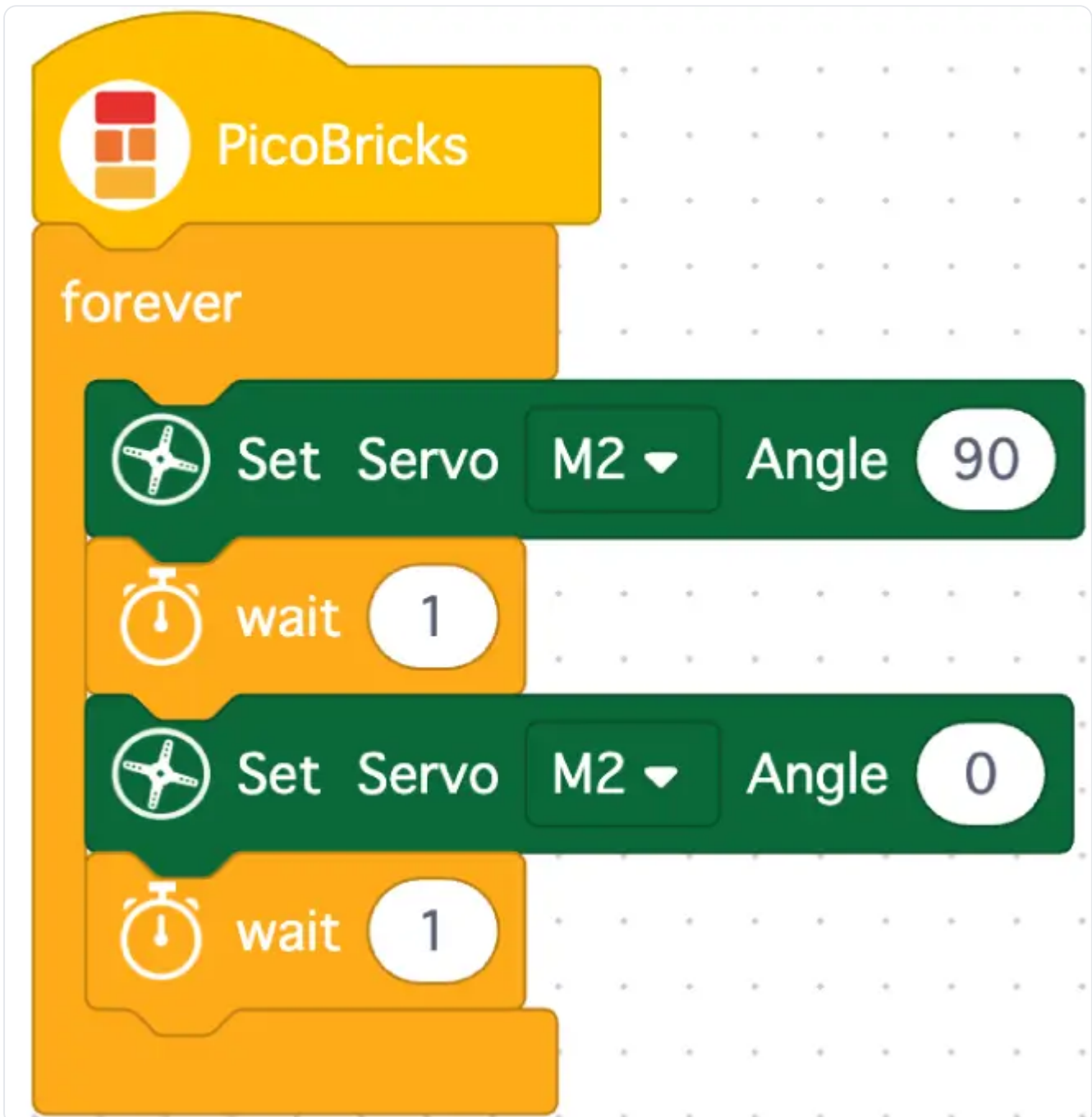
## 5 Set up your PicoBricks

1. Connect the PicoBricks board to your computer using the USB cable.
2. Open your favourite web browser (we recommend Google Chrome or Microsoft Edge), go to [ide.picobricks.com](https://ide.picobricks.com) and select **PicoBlockly**.
3. Connect the board to the coding environment by selecting the **connect** button at the top of the code area.



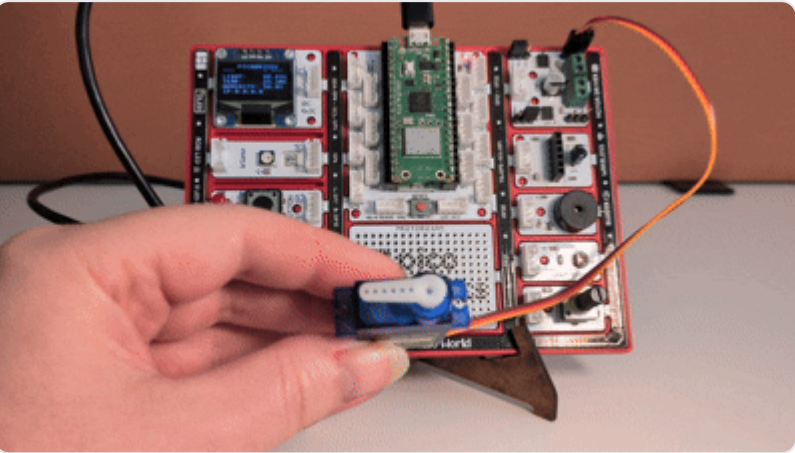
## 6 Build the code

1. Select **Basic**. Drag a `PicoBricks` block into the code area.
2. Select **Loops**. Snap a `forever` block onto the `PicoBricks` block.
3. Select **Motor**. Snap a `Set Servo M1 Angle 180` block inside the forever block. Change **M1** to **M2**, and change **180** to **90**.
4. Select **Loops**. Snap a `wait` block under the `Set Servo M2 Angle 90` block.
5. Select **Motor**. Add another `Set Servo M1 Angle 180` block under the `wait 1` block. Change **M1** to **M2** and **180** to **0**.
6. Select **Loops**. Snap a `wait` block under the `'Set Servo M2 Angle 0'` block.



## 7 Run it and Watch

Now the code's finished, let's run it. Select the **Run** button at the top of the code area. You should see the little arm on the servo motor move between 90 and 0 degrees.



## 8 Try it yourself

### Try it yourself

**Challenge:** Can you make the arm wave? Try adding more `Set Servo` blocks with different angles (like 0, 45 and 90), with a `wait` block after each one. What happens if you make the `wait` times shorter? Does the arm move faster?

## 9 Stuck? Quick fixes

| Problem                                     | Try this                                                                                                                     |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| The servo isn't moving at all               | Check the servo is on the top connector with the yellow wire on the left pin, and that the USB cable is plugged in properly. |
| The servo twitches or buzzes but won't turn | Check the jumper is pushed fully to the left so it's set for the servo.                                                      |
| The code won't run                          | Make sure you pressed the connect button and your board is connected in PicoBlockly before pressing Run.                     |
| The arm only moves once, then stops         | Check all your blocks are inside the forever loop so they keep repeating.                                                    |
| The arm moves to the wrong place            | Check you changed M1 to M2 on every block, and that your angles are set to 90 and 0.                                         |